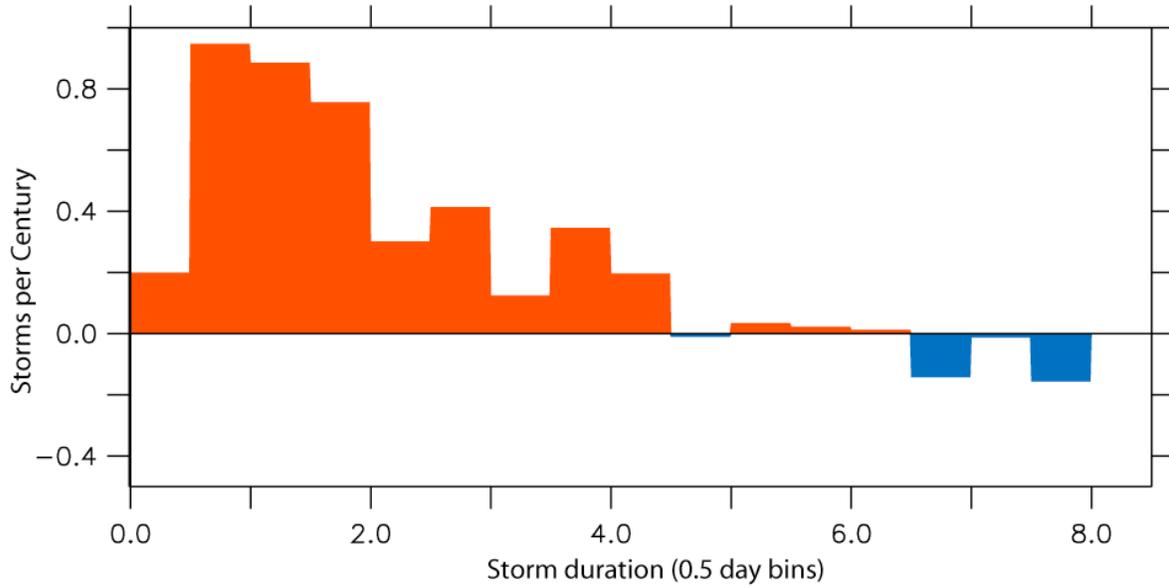


On-line Supplement:

As discussed in the main text of this manuscript, a large part of the secular increase in Atlantic cyclones recorded in HURDAT since the late-19th Century is due to an increase in very short-lived storms. Auxiliary Figure 1 shows the contribution to the 1878-2008 linear trend in Atlantic storm counts from storms of varying durations. In both the raw HURDAT data and that adjusted using the estimate of missed storms of Vecchi and Knutson [2008, VK08], the linear trend of storms in very short-lived categories – less than or equal to 2 days – provide the bulk of the increasing linear trend in storm counts. Meanwhile, there is a decrease in the number of longer-lived storms (duration > 7.5 days). It is unknown what the cause is for the decreased frequency of very long-lived TCs over this 130 year period.

In the main text, we used a two-day duration threshold for very short-lived storms, though this choice is somewhat arbitrary. However, as Figures A2-A17 show, the principal results discussed in the text (that the recorded increase in Atlantic storms since the late-19th Century is due to very short-lived storms, and that once these storms are removed there is no significant secular trend in Atlantic storm counts since the late-19th Century) are unaltered for a very short-lived storm threshold of 1.5 days and higher. As the threshold for very short-lived storm is increased, the adjustment of *VK08* is reduced, indicating that storms of greater duration were more easily detectable by the methodology of *VK08*.

Contribution to 1878-2008 HURDAT linear trend in storm count from each duration category



Contribution to 1878-2008 VK08-Adjusted linear trend in storm count from each duration category

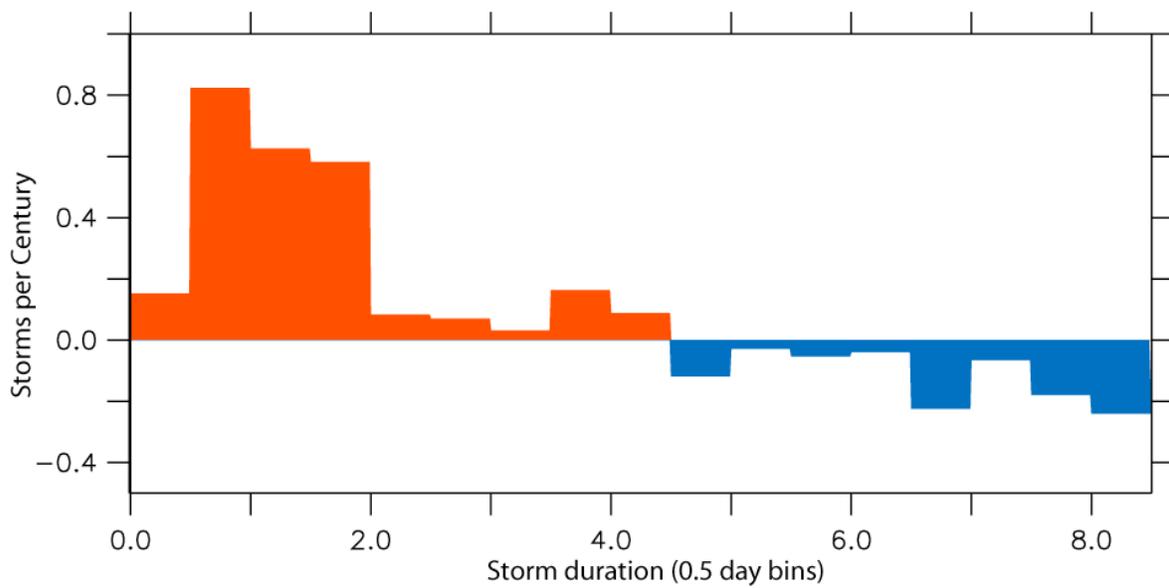


Figure A1: Contribution to the 1878-2008 linear trend in tropical storm counts from storms in each 0.5 day duration bin. Top panel is for the unadjusted HURDAT dataset, bottom panel is for the adjusted data using the methodology of VK08.

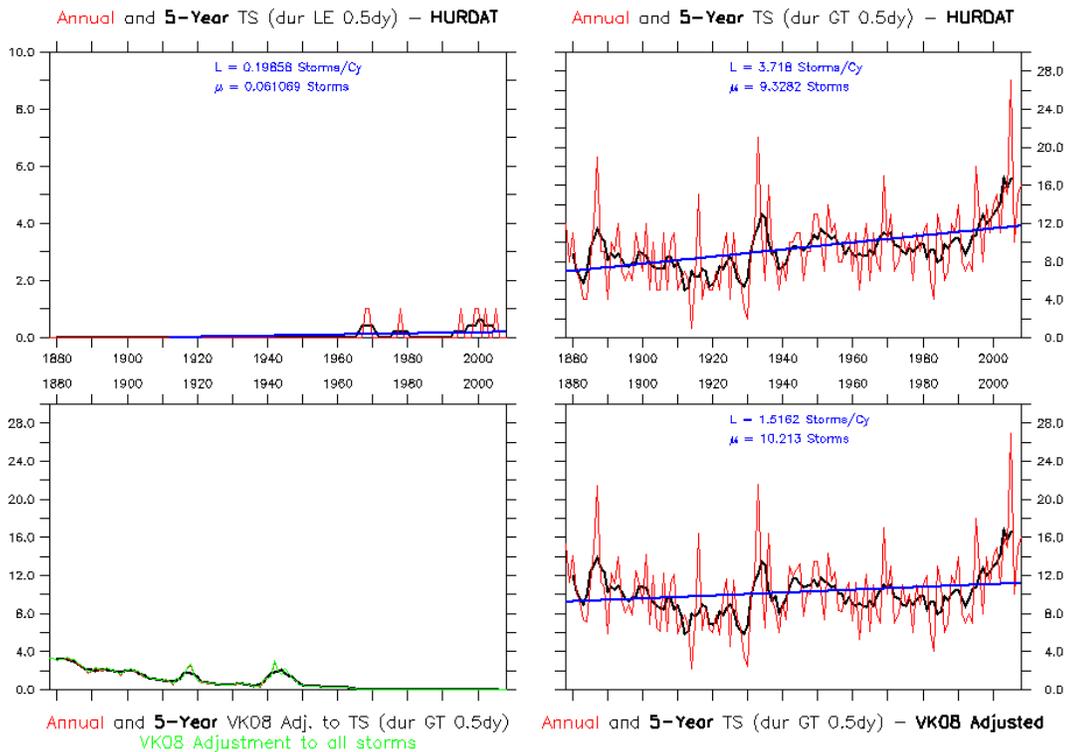


Figure A2: (upper left) Frequency (in red) of all Atlantic tropical cyclones (tropical and subtropical storms) which lasted as a tropical cyclone for 0.5 days or less from 1878 to 2008. (upper right) Frequency (in red) of Atlantic tropical cyclones that lasted greater than 0.5 days from 1878 to 2008. (bottom right) Adjusted frequency (in red) of Atlantic moderate to long-lived tropical cyclones from 1878 to 2008. For these three panels, the black curve is a five-year centered mean, and the blue line is the 1878 to 2008 trend. (bottom left) Estimated frequency (in red) of “missed” tropical cyclones of medium to long duration (greater than 0.5 days), “missed” storms estimated with the methodology of VK08. For the bottom left panel, the black curve is a five year centered mean. and the blue curve is the estimated frequency of “missed” tropical cyclones of any duration.

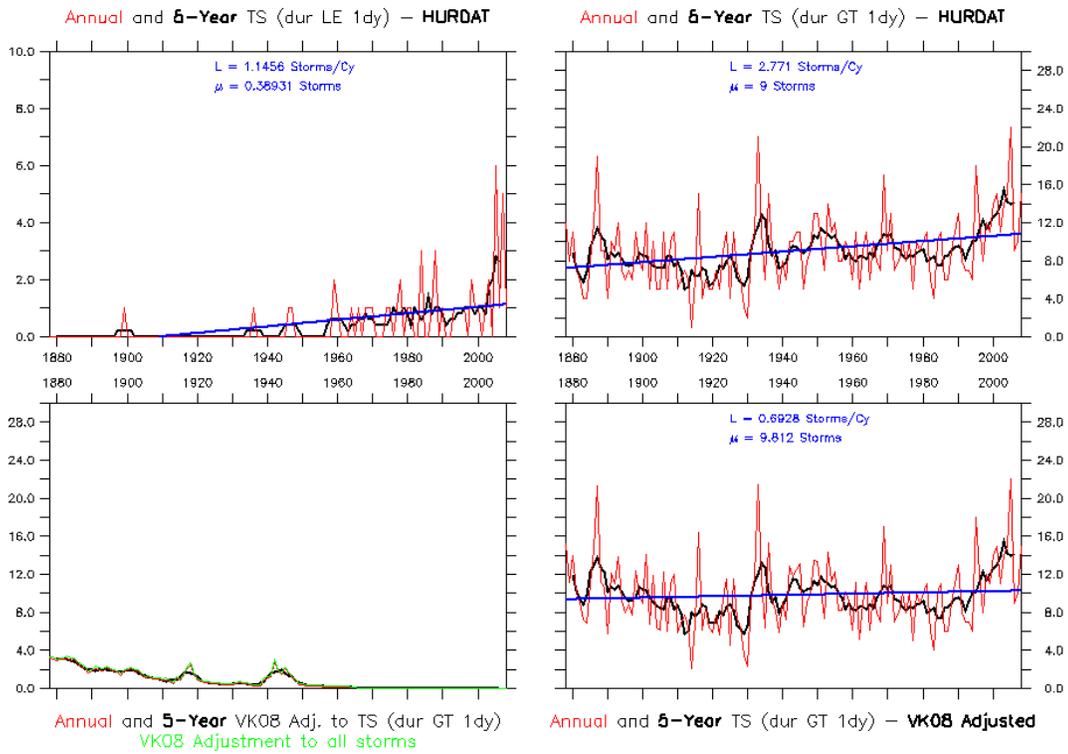


Figure A3: Same as Figure A2, but using a duration threshold for tropical cyclones of 1.0 days.

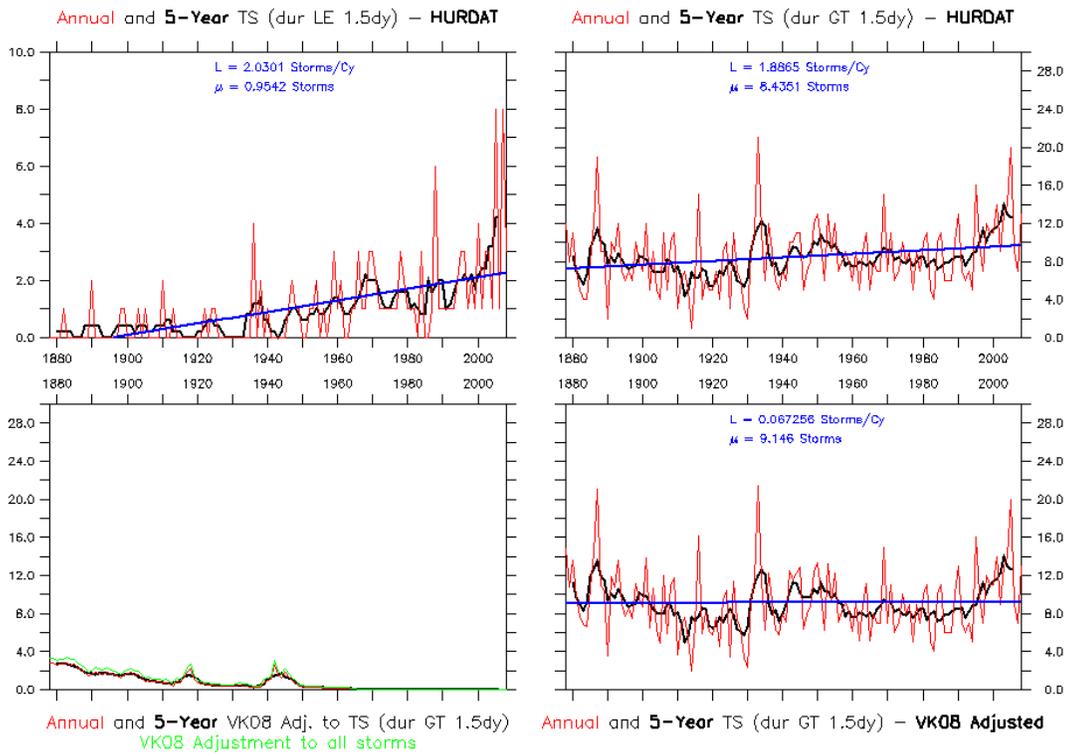


Figure A4: Same as Figure A2, but using a duration threshold for tropical cyclones of 1.5 days.

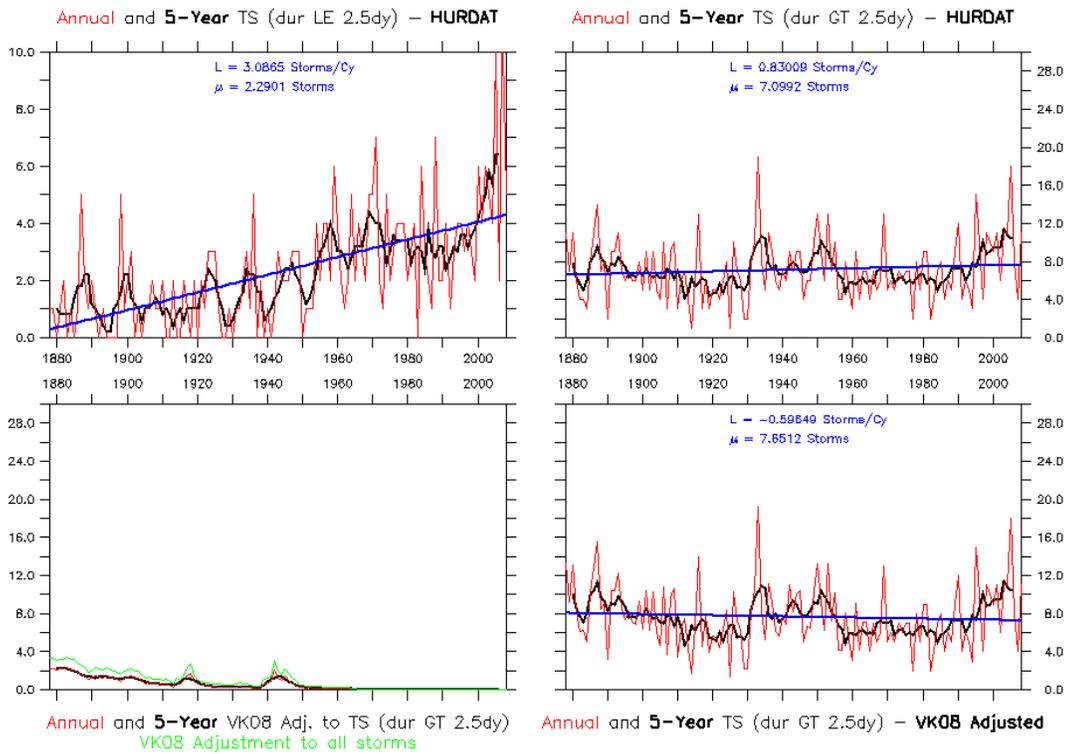


Figure A5: Same as Figure A2, but using a duration threshold for tropical cyclones of 2.5 days.

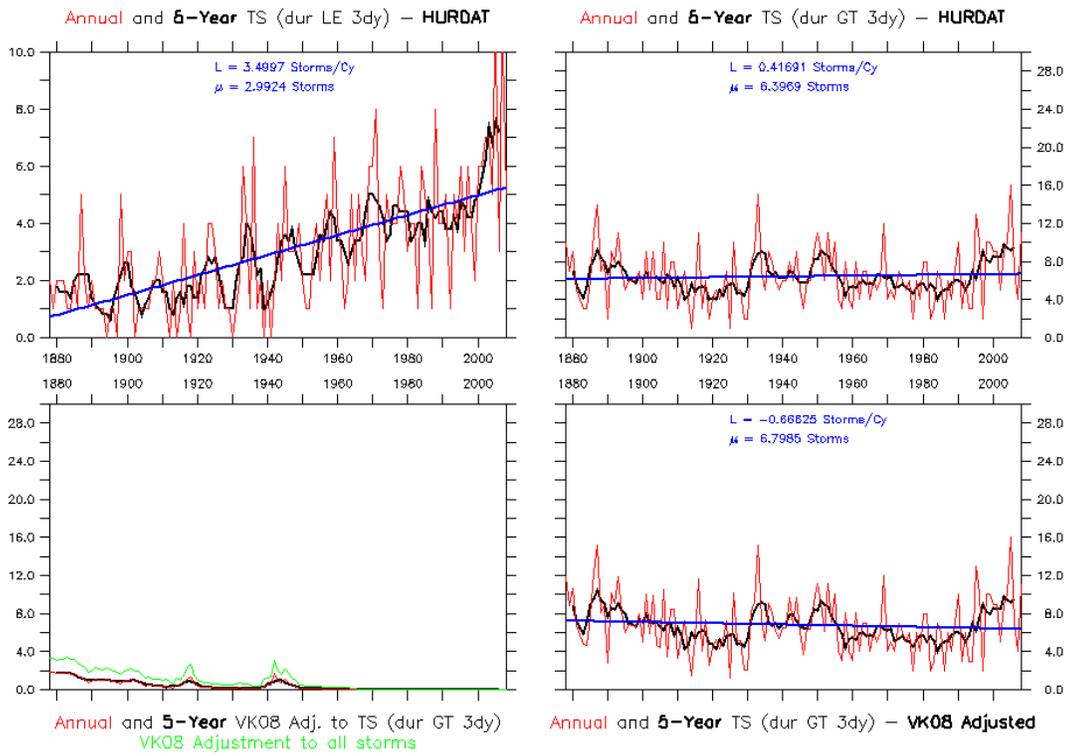


Figure A6: Same as Figure A2, but using a duration threshold for tropical cyclones of 3.0 days.

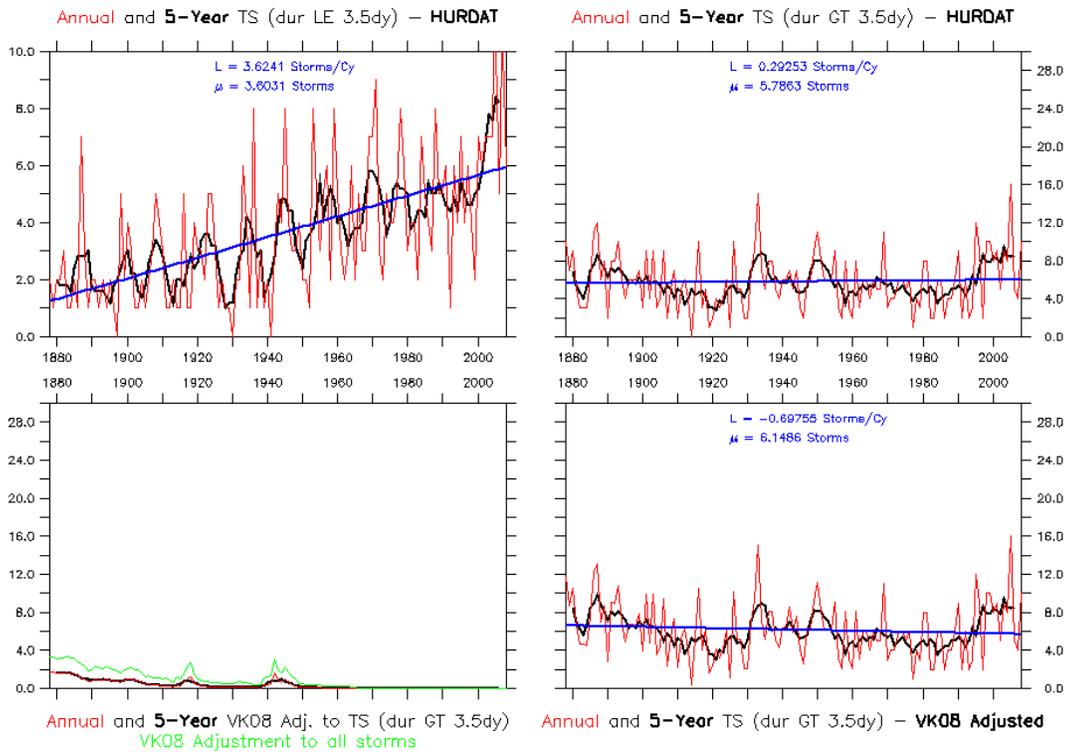


Figure A7: Same as Figure A2, but using a duration threshold for tropical cyclones of 3.5 days.

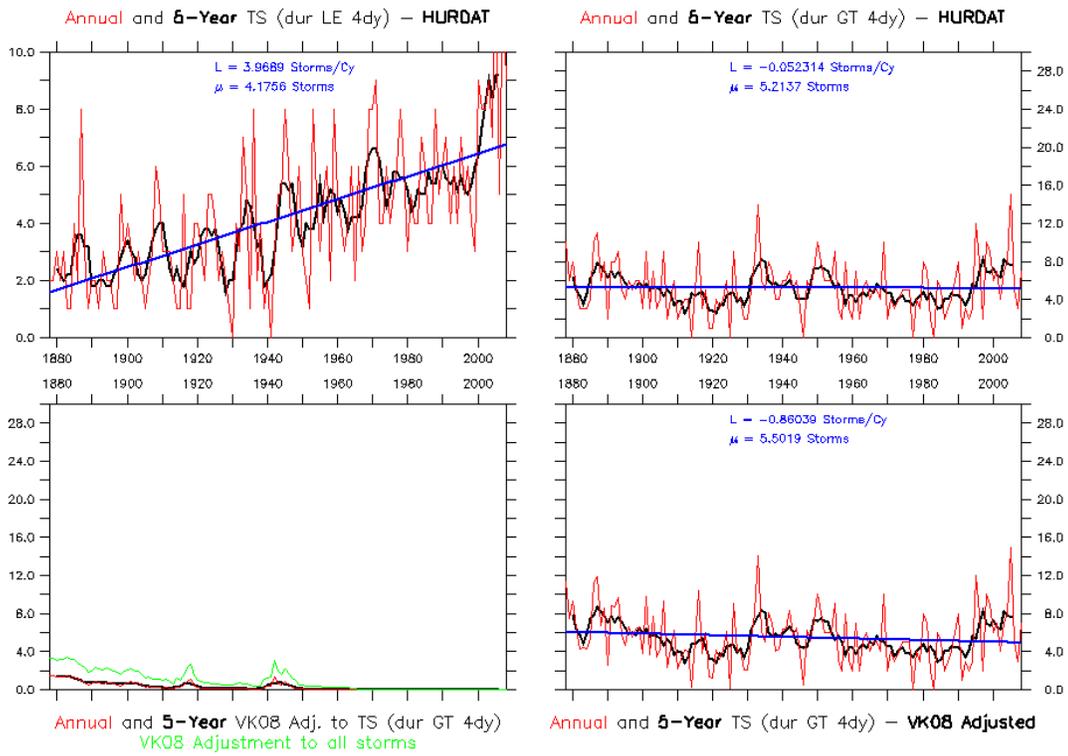


Figure A8: Same as Figure A2, but using a duration threshold for tropical cyclones of 4.0 days.

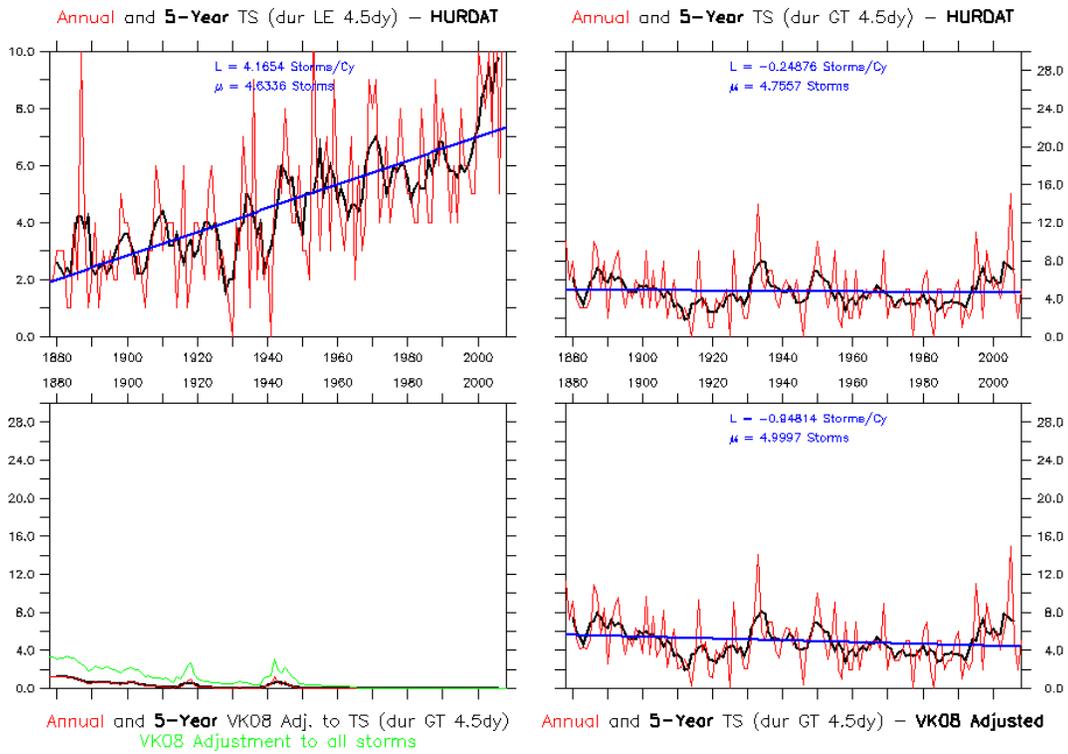


Figure A9: Same as Figure A2, but using a duration threshold for tropical cyclones of 4.5 days.

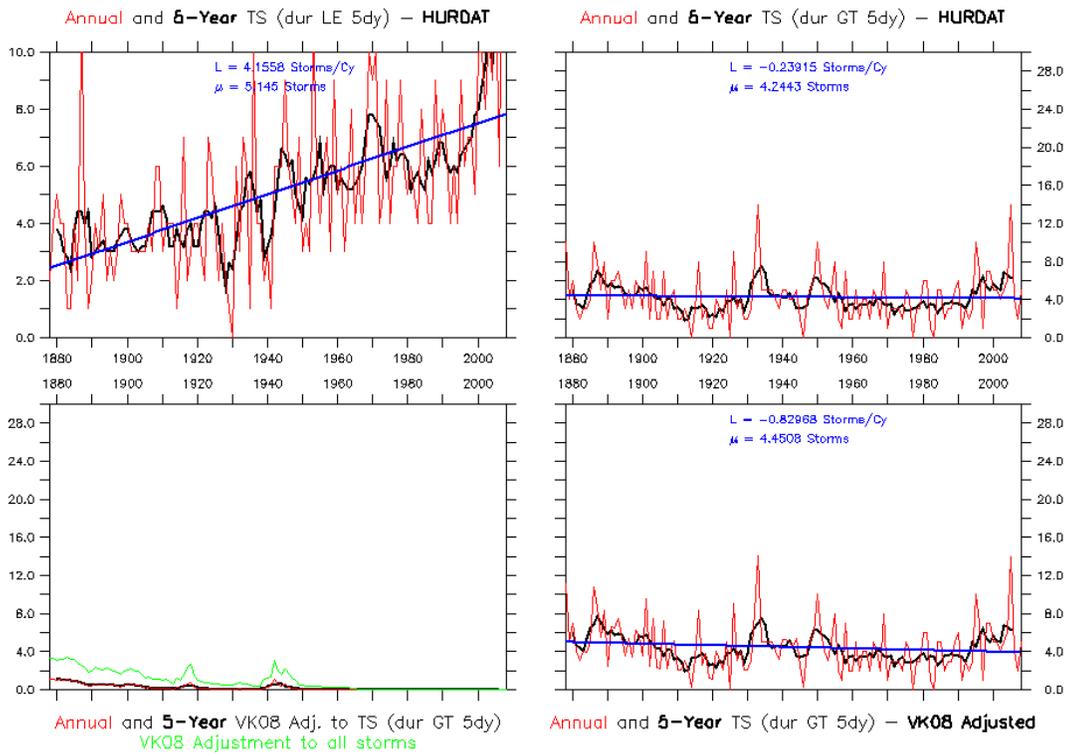


Figure A10: Same as Figure A2, but using a duration threshold for tropical cyclones of 5.0 days.

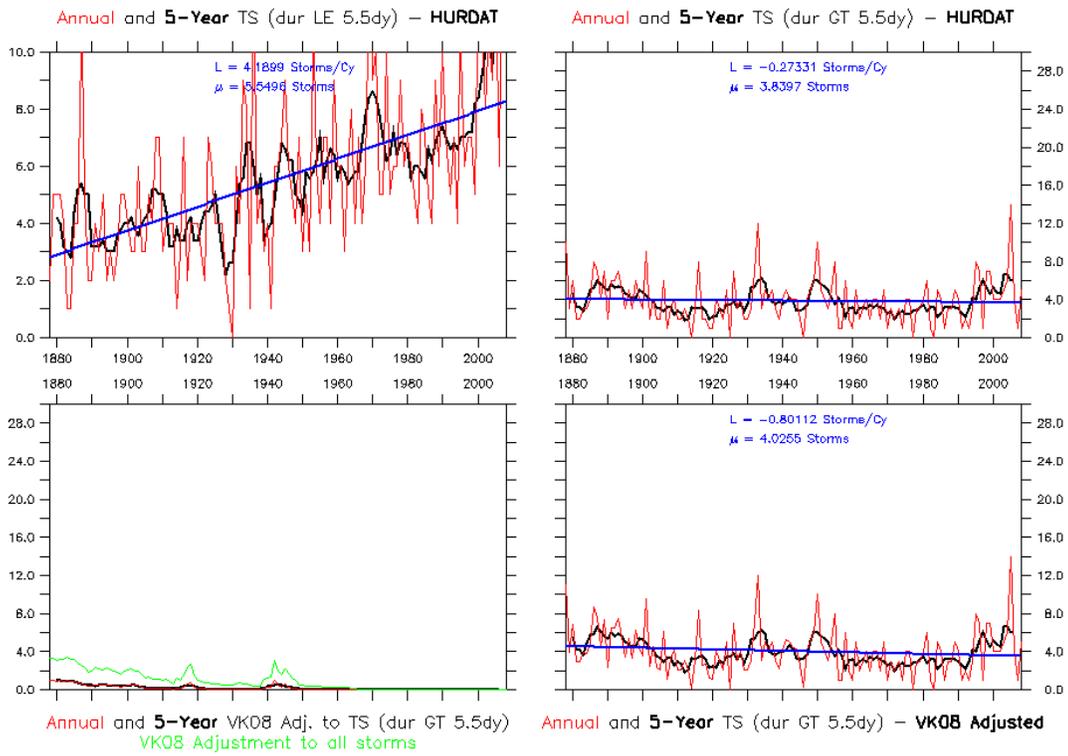


Figure A11: Same as Figure A2, but using a duration threshold for tropical cyclones of 5.5 days.

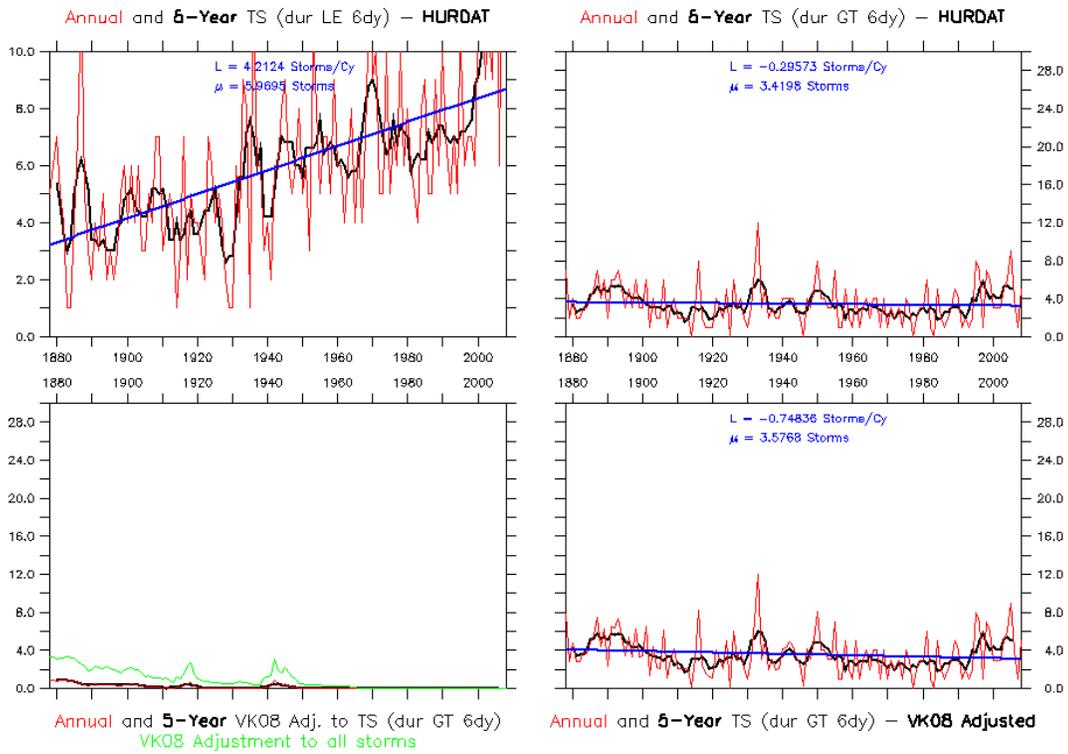


Figure A12: Same as Figure A2, but using a duration threshold for tropical cyclones of 6.0 days.

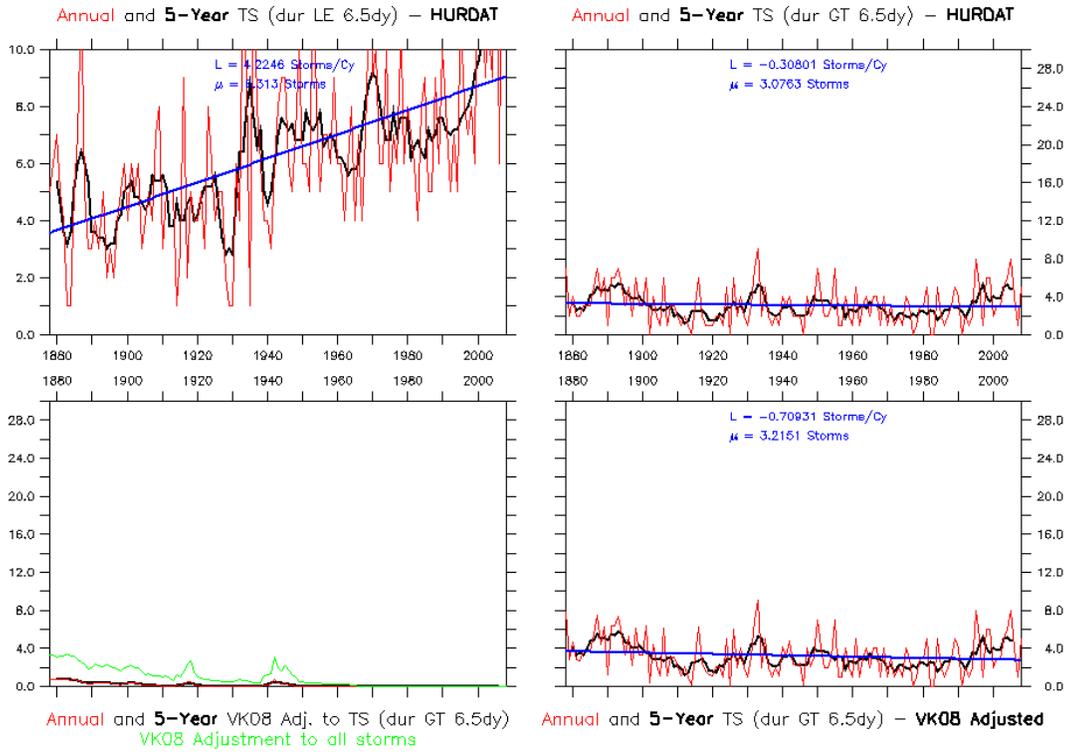


Figure A13: Same as Figure A2, but using a duration threshold for tropical cyclones of 6.5 days.

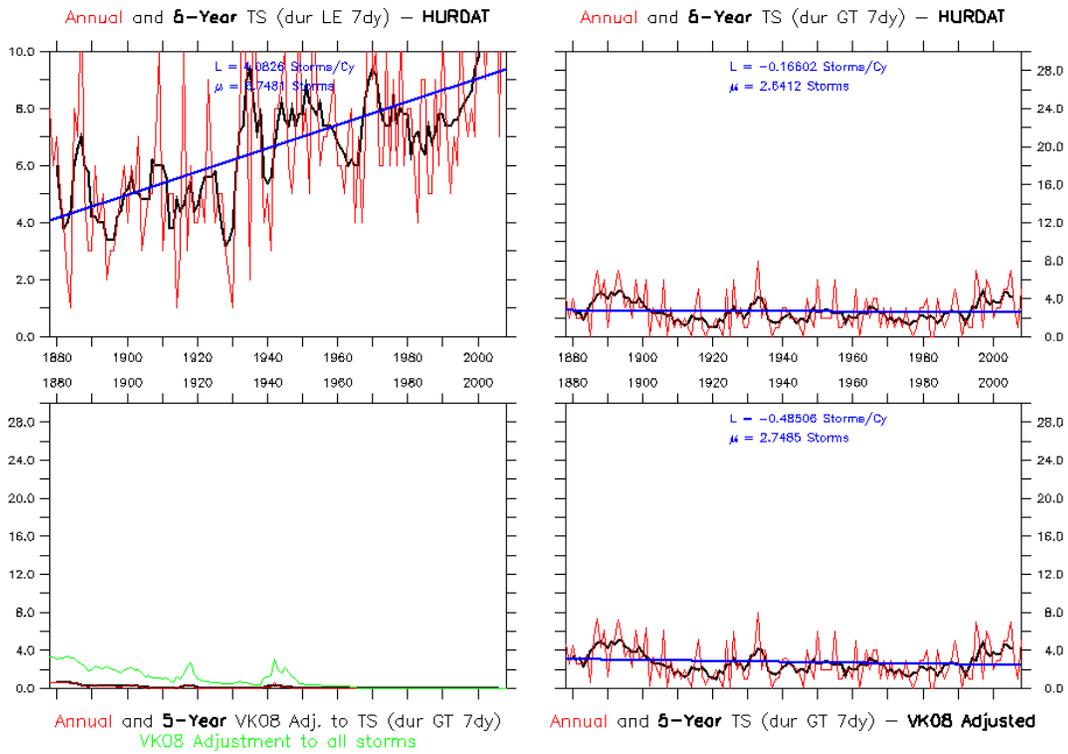


Figure A14: Same as Figure A2, but using a duration threshold for tropical cyclones of 7.0 days.

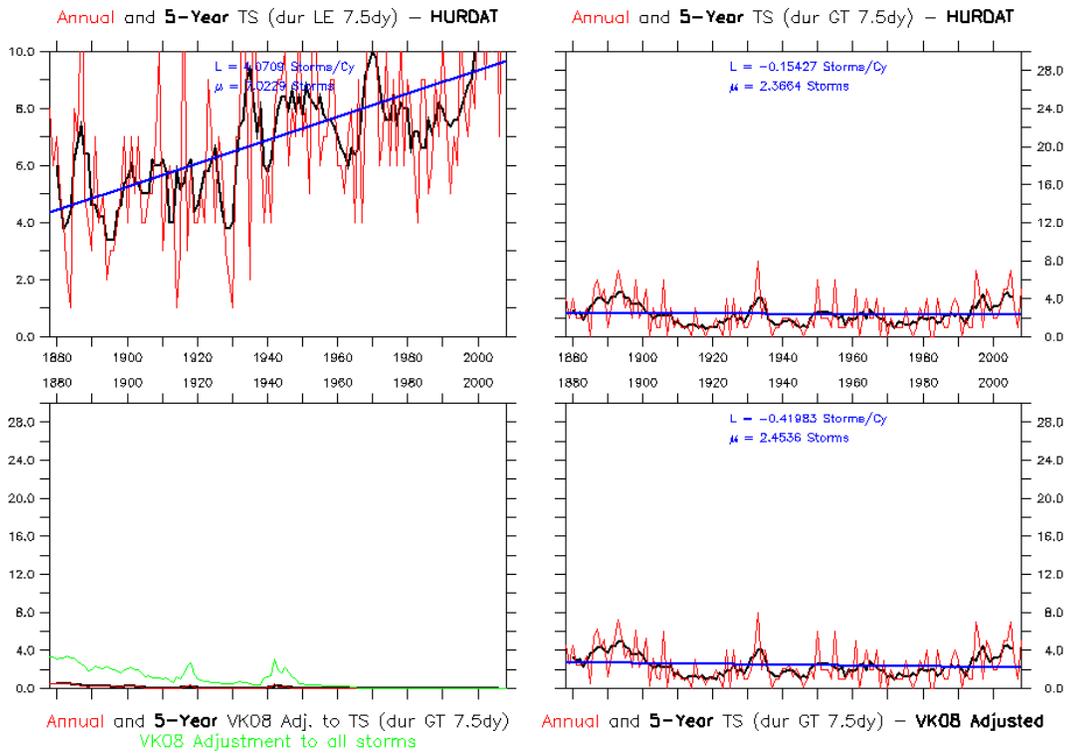


Figure A15: Same as Figure A2, but using a duration threshold for tropical cyclones of 7.5 days.

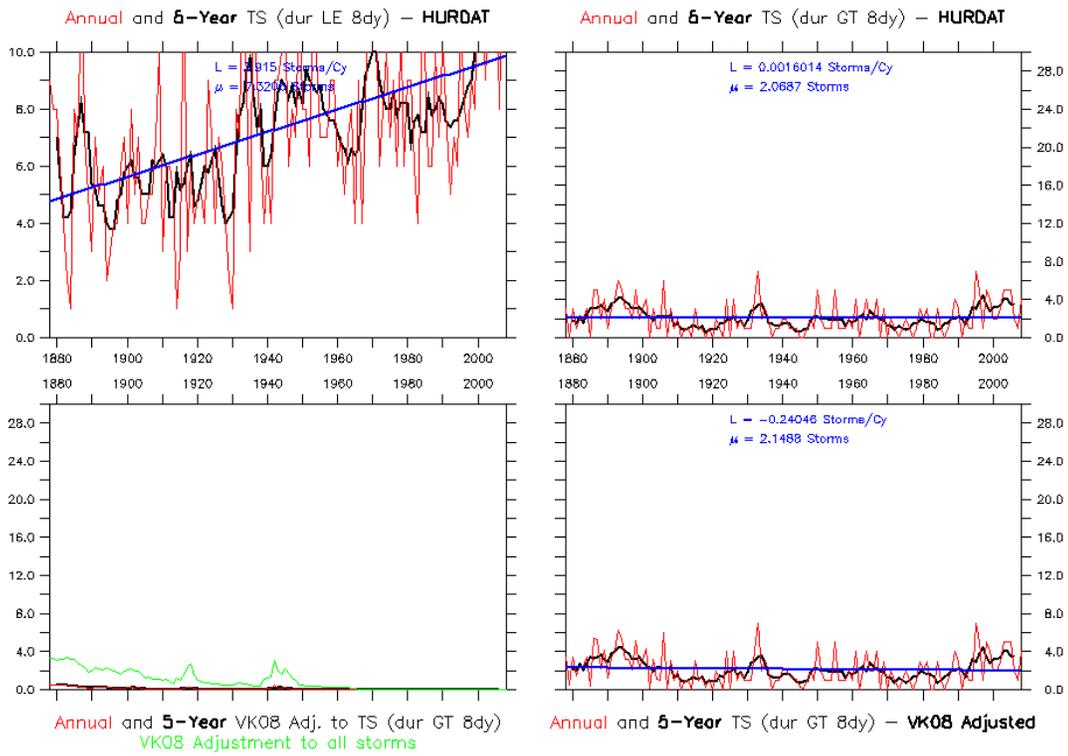


Figure A16: Same as Figure A2, but using a duration threshold for tropical cyclones of 8.0 days.